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THE RATIONALE OF TESTING INTELLIGENCE, WITH SPECIAL REFERENCE TO TESTING IN THE ARMY

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A BRIGHT young man went to the Harvard Graduate School to investigate the freedom of the will. After two or three years of investigating, he concluded that there is no such thing!

For some decades, we psychologists have been measuring general intelligence. Are we sure there is any such thing? Investigation has been steadily deleting the definite article out of psychology: "the" memory, "the" imagination, "the" intellect—to use these terms with serious face is a confession that you have been reading the antique books on "mental philosophy" and neglecting the modern ones on differential psychology.

But is not *general* intelligence "the" intelligence? Can it fare any better? And to test it—is not that like testing the pulling strength, not of horses, but of "the" horse, a logical concept which stands in nobody's stable?

There are certainly two sides to the question, unless we can make out definitely the meaning of the phrase. It appears that general intelligence can be defined in terms of (1) mind, or of (2) brain, or of (3) environment.

1. The word "intelligence" throws back by contrast that which we are *not* measuring, namely, the feelings, and (if there is any such thing apart from intelligence and feeling) the will. Sensation and the sense-complexes, perception, memory, imagination and thought, these constitute intelligence. General intelligence is efficiency in the formation of sense-complexes as a means of dealing with the outside—yes, and the inside, world.

2. Speaking in terms of the brain, we know that it has two general levels: the lower level, like the entire brain of such an animal as a dog or a cat, is composed of centers which respond, more or less independently of each other, to such outer subjects as can excite them. The visual tracts see, the auditory neurons hear, and so on. The intelligence of a dog, or a horse, or of a one-story-brained *homo*, is the net result produced by these centers, unguided as they are, by any superior neurons. And such, too, roughly, is the intelligence of even a bright child, whose higher, reflective nerve cells have not yet come to command.

But these nether neurons of the brain are like the privates

of an army, taking the direct shock and beat of the aggressive world about. The superior cells are the headquarters of another kind of general intelligence, a kind of commanding general intelligence. It has a dual duty: it deals with concepts, symbols and abstractions instead of material things; and it issues general orders to all subordinate centers.

Here is the home of "the" faculties, "the" attention, for example, which gives the command, "Attention," to all the lesser faculties, visual, tactual, auditory, and the rest, and reminds them to "make it snappy"! Here, too, lies the reason why it is so much easier to test the intelligence of a high, than of a low, subject: it is the difference between getting a single report from the head of a unified command, and collecting the muster rolls of all the scattered detachments of a Russian or a Mexican army. Also, here is one explanation of why testers are so prone to use numbers, words, symbols, concepts, abstractions, in their measuring schemes: they commit the psychological fallacy of assuming that others are like themselves, double-decker intelligences, and that in so far as one can deal with these higher things, certainly all the lower must have been added unto him.

"General" intelligence, from this point of view, is the unified, supervisory intelligence of the superior centers of the brain.

Finally, intelligence is (intellectual) power of adaptation to environment. This involves (a) sensing the situation, perceiving it, (b) comprehending, elaborating, perhaps analyzing or synthesizing it, and (c) responding (mentally) to it. "What would you do if you missed your train?" To ask this question of a subject is next best to seeing him in such a situation. He must exercise his "sense of reality" on it, size it up, plan his reaction. Testing seems simple enough.

But this world is made of situations. And if they are new enough to require much adaptation, we may not be able, with words merely, to create in the test room a replica of them that will be *real*. It is useless to ask a savage what he would do if he missed his train, or an old bachelor what he would do when the baby cried, or a green soldier how he will behave when a shell bursts near him. Further, just which of many millions of situations are so important, or so typical, or so closely correlated with a web of others, similar or dissimilar, that they should be admitted among the select few that form a test? The answer is coming as a slow deposit from the stream of experience and experiment.

If we are clear as to the more obvious outlines of what we

are testing, the next question is, what are we testing *for*? It would be interesting, and perhaps instructive, to collect from common life many varied instances of the application of test processes.

Teasing, teasing,
Just to see what you would do;
Teasing, teasing,
To find out if your love was true.

Here is a thrilling test, with a fairly well-defined object. So Abraham undergoes a kind of divine teasing, to find out if his love for God is true enough to compel the sacrifice of his son; Elijah sets up a test to find which Lord really is God enough to make the fire fall; the farmer tests his seed by planting a sample; a small metal column is cast beside a great pillar, and of the same stuff, to find its breaking strength, and so on.

What is all this for? Not for classification merely, but for *action*. It is not a mere museum arrangement of individuals that we are working for, to put them in place and gaze at them: we want to know what some person or persons can or will do in our common environment, or in some special situation. That is the best test, and he is the best tester, that can most definitely predict and control how the subject will turn out. This is the test of a test, designed to lower any prematurely lifted brow that may be found among us.

Let us suppose a complex machine, consisting of many parts, such as an automobile, or the brain of a soldier, which must perform under new and trying conditions: the soldier is going to France; the automobile is to leave the paved and level streets of the city for country mud, hills, ruts and rocks. How, here in the garage, can we find whether our machine will stand the new strain? That test will tell best which is most like the new conditions that must be met. A certain automobile company, wishing to test out tires, exhausted all its laboratory ingenuity in vain, and finally fell back on an actual run of the road, through thousands of miles, as the only test conclusive.

But war will not wait for soldiers to be selected on this plan. They must be tried out in the tent, so to speak, and quickly, by our best means of predicting what they will do in the fighting field.

Let us have a symbol or two: Let *T* stand for the great and ultimate trial and test, which is life itself; *t* shall be our petty laboratory test, by means of which we predict how the subject will turn out in *T*, the life situation. Then we can safely lay down the general principle that *t should be as much like T as possible*. It is the old laboratory game right over: construct a

miniature of your big problem, keeping the same principles at work. So the electric spark in the physical laboratory is a small sample of lightning, and the first wireless waves we know of traveled half way across a room instead of half way around the world.

There are at least two special reasons why *t* should be like T in much human testing. The first is that only so can we be sure of inducing the *attitude* necessary for success in T, and that is half the battle. "The will to win is half the victory." The animal psychologist meets this demand by setting his task, perhaps the threading of a maze, between the animal and some strong natural satisfaction, as that of hunger. Trivial as it may sound, there are few American soldiers who would not work hard at an intelligence test that permitted them, in some symbolic way, to can the Kaiser! On the other hand, if there is something about *t* that rouses the subject to supreme effort, whereas T proves so dull as to leave him apathetic, he will be rated too high. Perhaps the constant attitude of "You're in the army now," which means among other things, that you will put through what you are told to do whether you like it or not, makes this warning less necessary in military testing. But we know how much *morale* counts in execution—and *morale* is simply mental attitude.

The second reason why *t* should resemble T is that *t* may be so specialized and limited as to miss some of the important action features of T altogether. In case of the automobile, for instance, we might test its valves, radiator, carburetor, transmission, and so on—do not advertisers thrust some one of these things into our attention as if it were the whole car?—only to find that a bad spring or differential or axle made proper performance impossible. It is the total run that counts.

To put it in terms of neurons, or, as Thorndike would say, connections: T is bound to bring into play certain nervous connections between stimuli and responses. In any such complex situation as soldiering, there is sure to be a wonderful web of them, some old and well worn, some thoroughly new. Through *t* we must find out whether our subject actually or potentially has these connections. Testing them all, in a limited time, is often out of the question. We can (1) test a certain few of these connections which seem to be typical and fundamental, or (2) test other connections whose functioning is highly correlated with that of the T-neurons, or (3) test those connections, relatively rather low-lying in the brain perhaps, which are involved in the exercise of "common-sense," assuming that one who has a good sub-structure of common-sense connections

can probably build up a superstructure of special-purpose connections, or (4) test the high-level neurons with symbols, thought processes, etc., taking it for granted that any brain which is equal to these lofty tasks can certainly perform all lesser. Actually, in the army, we are doing all four.

If we are testing old achievement, which will not require much variation to fit it to new conditions, t can almost become T , as in the trade tests in the Personnel Department of the army, where a man actually drives a truck as a test of his truck-driving intelligence. But as a rule, some adaptation to the new is required in T ; and if we merely bring well-established connections into play in t , such adaptation is but doubtfully tested. But if t is *absolutely new*, as when we ask a savage what he would do if he missed his train, or if we use strange language, or require really new reasoning processes, it is too difficult. The solution lies in a *new combination of old mental materials*. So it is not surprising to find that we can distinguish the feeble-minded from the normal much less well by having them count forward, or tell their age, or go through some other practised activity, than by having them count backward, or answer problem-questions. The adaptable mind distinguishes itself, not so much by the wealth of its information, but by its ability to organize its facts and processes in new ways to meet new demands, to set its neurons to work in new systems, involving new connections.

Now, t is like a small stereopticon slide by means of which we project our picture of what the subject's larger future performance will be. For this reason, we must take care that t is not marred or distorted by anything which is not likely to enter into T . For example, objection is sometimes made to certain tests used in the army, on the ground that they require reaction within a fixed time limit, and a limit so brief that no subject ever completes the full test. But the military game is a fast one: wherever the soldier is placed, he is likely to find fast intelligence at a premium as compared with slow. To some extent, this principle would even justify the examining of recruits who are undergoing the effects of fatigue or inoculation, since the military T demands a clear head in spite of a suffering body. But in t , it is difficult to make the suffering uniform, and so make it fair.

It may help us further in determining what our scheme of intelligence testing should be if we consider what a complete inventory of intelligence would require. There are here, as everywhere, two great questions to be answered, What kind? and How much? To find a way to the answering of these ques-

tions, we must revert to the nature of intelligence and analyze it a bit further.

"Intelligence is intelligence," it is sometimes said, "whether in the skull of a Negro, white man or Chinaman. There are no *kinds*." I believe the bio-psychological concept of *traits* will help us here. To put it briefly: the cerebrum is not a single, simple, homogeneous organ, but rather a collection of organs. Doubtless there are separate determiners in the germ plasm for its separate parts, so that these parts are "independently heritable and independently variable." These parts—call them centers, or better, tracts—are the cerebral counterparts of those various objects or aspects of the environment which it has proven most important, evolutionally, for man to respond to. Each of these tracts is the seat of a trait. And each trait should be defined, not in purely mental terms, but as a reaction to something environmental, as the trait of acute color perception, or the ability to remember words well. A person is the sum of his traits.

Here, then, is the basis of the question, What kind? To test one set of traits with *t*, and then use another *T*, may prove as useless as to test one man and then use another. Tracts may be wanting in this brain or that, and hence the corresponding abilities wanting in the personality.

Now for the question of How much? Intelligence is not a unit power plant, a single motor which can be belted to anything indifferently, with equal prospect of running it. The *ensemble* of mental traits which make up a personality is more like a collection of separate motors of varying size, which, though they may influence each other's running, nevertheless operate ordinarily with considerable independence. In measuring completely the efficiency of a machine, say an automobile, we must find (1) what kind of parts it has and (2) how strong each part is. To measure a mind completely, we must find (1) what kind of traits it has, and (2) to what level of effectiveness each trait rises.

Now, what possible levels are there? Suppose several people have the trait of reacting strongly to color. One may perceive and act, as certain of the lower animals are said to react to red; the second will perceive-remember-act, will admire the rainbow and try to reproduce it when he gets home; the third will perceive-remember-imagine-act, will juxtapose remembered colors in fanciful combination; the fourth will perceive-remember-imagine-think-act, will work out the laws of color contrast, harmony and balance, and so set forth results by rule. The levels of a trait, then, are those of perception,

memory, imagination, and thought. The last two are likely to involve pretty prominently the processes of discrimination, comparison, analysis, synthesis.

Here appears the reason for avoiding the alternative test, the yes-or-no test: it leaves no leeway for trait-power to rise by degrees until it reaches its true test-level, but simply shows presence or absence of some more or less indefinite degree of the trait,—and this not very certainly, since there is always a fifty per cent. chance of a correct guess.

Here, too, we can see clearly the value of special tests for special purposes. We are sometimes asked whether the intelligence test, as used in the army, does not discover special ability of this kind or that, special fitness for some special military position. In a limited way it may do so, and in half-accidental cases; but we can not substantiate any broad claim of this kind. For it is characteristic of the general intelligence test, so far as its *what kind*, its range of traits tested, is concerned, to deal almost wholly with the materials of the everyday environment only—how else could it be fair to all?—and with regard to its *how much*, the height, or degree of the traits, to rise to the level of the thought processes, but to require the most common of them only, and not to run through their whole catalogue. Our test for literates (Alpha) accomplishes these two things by means of *abstract symbols*; and leaves much, in the case of these favored subjects, to *individual initiative*; whereas the test for illiterates (Beta) makes the paper work more concrete, putting in pictures and diagrams, and leads the subject on by the attraction of *imitation*, to do about what he has just seen done on a blackboard.

The general intelligence test, then, tries out simply the central core of consciousness, so to speak, and that in a general way only. Its t is very small as compared with the T , the life situation, for which it tests. Since the ratio $t:T$ is so small, we must be careful how we translate minute and perhaps accidental variations of t into the large and serious terms of T . A few points up or down on the testing scale, in any individual case, may not mean much with regard to pragmatic intelligence, exercised over a long span of time.

Because the general intelligence test leaves unexplored so many traits, and certain ranges of all traits, there are necessary as many special tests as there are special situations into which ability is to be fitted. And they have the advantage that T is smaller, just because it is a special, and not a general situation, and hence t can be made proportionately larger. In many cases, t practically becomes T —the ideal situation.

Take a case of this. An Indian captain has told me of an Indian soldier who is blessed with a wonderful "bump of locality." His friends tested this out by taking him to Washington, D. C., pointing out Potomac Park, and then whirling him from point to point of the city in the endeavor to confuse him as to direction. But in no case did he fail, after scanning the horizon a bit, to point straight toward Potomac Park whenever and wherever challenged to do so. It seems certain, after such a try-out as this, that he has at least one invaluable qualification for scouting. In the army, such discovery of a special talent for a particular purpose falls in the Personnel Department.

Let us look next at some of the obvious dangers of intelligence testing. In the first place, we must beware how we use a high-level test to measure low-level intelligence. If our scales are set to weigh nothing less than a hundred pounds or upward, we can not tell accurately the weight of an eighty-pound man. In particular, since devisers of tests are usually expert in the use of literary symbols, and since ordinary test conditions limit seriously the possible variety of responses open to the subject, we slide easily into the belief that a dextrous manipulation of symbols is the prime display of intelligence. No doubt it is true that in an ideally developed brain, the language centers (tracts) are well webbed up with every other trait-tract. Ideally, to experience anything is to be able to utter it. But the stammering lover is matched by the stammering thinker, and there certainly may be intelligent action without the power to put it adequately into words. Probably Cæsar is the only great general who could describe a battle as finely as he could plan it or fight it. Words without deeds, deeds without words: we must be prepared for both. Our old test question, "Why should we judge a person by what he does rather than by what he says," applies to the test itself.

The bulk, and sometimes one hundred per cent., of those who fail in our army test for literates (Alpha) raise their grades when they take the test for illiterates (Beta). This suggests (though it does not prove) that the intelligence is "there," all right, but whereas it can not "come through" in literary terms, it does break out successfully in the more concrete form.

A further danger lies in the use of a general test for special vocational fitness. To a limited extent, this is justifiable: for gumption is valuable in all vocations, and a good intelligence test does test gumption. But the general test tries out, chiefly, what I have called the core of consciousness, and special vocational ability often lies in traits outside that core. So we hardly expect the general test to determine whether one is, or can be,

a good typist, musician, farmer, blacksmith, or social worker. But the general intelligence test should yield us two results even here. (1) Other things being equal, he will be best in any vocation who has the highest general intelligence. It is worth while—and the effort is being made—to have intelligence scales carefully worked out for each vocation, to accompany and supplement the special tests for special abilities. (2) General intelligence, among novices in any vocation, should be, on the whole, a good index of rapidity of improvement and final limit of development.

It may be objected that testing in the army has tumbled into the very pitfall here pointed out, of applying a general test to find out the fitness of a man for the special vocation of soldiering. But soldiering is not mere gun-pointing and trigger-pulling: it is a multiplex and all-inclusive vocation, involving nearly every kind of activity found in civilian life and some besides. Soldiering is full of general situations that require general intelligence.

There is a third danger which is just the opposite of the second. It lies in passing from a specific test to a general conclusion. Strangely enough, even some who deny the efficiency of formal discipline, seem to accept the efficiency of formal testing. For example, they assume that they have tested "memory" when immediate memory span for *numbers* has been tested, or that they have tested "attention" or "perception" by having the subject cancel all the A's out of a page of pi. A fourteen-year-old girl whom I once taught never did remember the multiplication table, yet she could easily catch complex pieces of music, retain them, and play them from memory.

We test what we test; but just how much more we measure, in the *mass* of subjects, we must find out by calculating correlations. And in the *individual*, nothing but complete, exhaustive probing is adequate. Here is further justification for the employment of several sub-tests as components of a complete general-intelligence test.

Finally, we must guard against giving a test, standardized by extensive mass methods, too close an intensive, individual application. Whenever we apply a standardized general test to any assemblage of complex parts, such as an automobile, or a horse, or a brain, we are sure that we can divide any collection of such units into grade groups, ranging from high grade to low. But any particular machine or animal or brain may hold up or break down contrary to our prognostication, based on the test. For this reason, we should make haste slowly (to avoid making progress backward) in establishing dividing lines that cut

sharply. It is taking too much responsibility to say that positively no one who can not make a certain average-to-high numerical grade in an army intelligence test is fit to be an officer—or a president. If Hughes had tested out higher than Wilson—why not give all candidates for office an intelligence test?—would it, and should it, have changed any votes?

With regard to testing in the army, two large questions arise:

1. Can we measure the intelligence of army men?
2. What military value has such a measure?

When a man enters the army, he is tested in practically every part: there is a board to look after his bones, muscles and joints, a heart board, a lung board, and so on. At length appeared a brain board, so to speak, the Neuro-psychiatric Board. Certainly there should be a board to pass upon the nervous system, for it is the controlling system of the body. Though all other organs be sound, they will be ineffective without a good governing system.

But all these various boards give, in general, a yes-or-no judgment, "good enough for service," or "not fit for service." They do not measure *degree* of fitness. Their attention is not so much on the normal as on the abnormal, and their chief effort is to keep that abnormal out of the army (or, if possible, to improve it sufficiently to serve). The neuro-psychiatrists aim to eliminate the neuro-mentally abnormal.

But now appears a new board, the psychological board, more accurately, the psychometric board, whose fundamental propositions are (1) that intelligence can be measured and graded; and (2) that grade of intelligence is so important that placement in the army should be made accordingly. An interesting innovation, surely; for nowhere else are all recruits measured and graded, beyond the yes-or-no, accepted-or-rejected plan, except in the Personnel Department, and not even there by such exact, objective standards. If the two propositions above are true, they fully justify the use of the increased space and personnel which the Psychological Board uses as compared with other boards which do not attempt such measurement, and fully justify also the total expense of psychological examining as the price of effective classification and placement.

With regard to the possibility of measuring intelligence, two extreme views are found. The first is, that it can be read off so readily from the subject's face, walk, etc., that there is no need of further measurement. The second is, that it can not be measured at all! Those who take the first view can usually be convinced out of it by actual trial—if they are game enough to

make one under controlled conditions. They succeed about as well as did the three teachers who were asked by Binet to estimate, off-hand and independently, the intelligence of each of a group of children. It is recorded that the three sets of results showed hardly any agreement.

Intelligence can certainly be measured. The only question is, How accurately? Here, it is only possible to mention a few of the lines of evidence which give the psychometrist faith in his results. (1) Certain tests have already enabled us, in civilian life, to predict educability, school progress. (2) The psychometric rating agrees fairly well—and too close correlation would arouse suspicion—with the rating of intelligence as given by officers who know their men thoroughly by long contact. (3) Officers, “non-coms” and privates show three very different averages, in the order mentioned, and three distinct, characteristic curves. (4) Racial difference stands out as previous investigations would lead us to expect. (5) The lowly-educated, who have had limited opportunity, sometimes surpass the more highly educated, which indicates that we are measuring innate ability rather than conventional education. (6) Repeated, independent measurements, give harmonious results.

By setting men at various tasks which test the heart, lungs, muscles, and so on, we can get a gauge on their general physical efficiency. By setting them tasks which tax perception, memory, understanding and the like, we measure their mental (intellectual) efficacy, can try out the running gears of their intellects.

Now for the second big proposition, which I think we can state, in extreme form, in this way: Granted a passingly good physique, intelligence is thereafter the most important factor in military efficiency.

It appears to me that neither the yes nor the no of this can be proven at present. The practical importance of intelligence in every-day situations is brought out by the much-repeated injunction to “Use your head!” On the other hand, our tests do not go far in measuring response to *social* environment. There are many cases in daily life where one is impressed with the truth of the adage that “Good nature is worth more than good sense.” Line officers sometimes place on intelligence a lower value than we would expect, emphasizing rather such qualities as loyalty, obedience, adaptability and dependability. If you insist that a regiment should be balanced on the basis of intelligence, placing the same amount of it in each company, the line officer might reply that he wants it balanced according to discipline, or courage, or initiative. That the superior intelligence

of man has been the decisive factor in placing him at the head of the evolutionary race seems extremely likely. And Terman states that "with the exception of moral character, there is nothing as significant for a child's future as his grade of intelligence." Yet intelligence lies largely in the upper, most recently evolved, most delicate portions of the brain. It may be a very significant fact that, although the ratio of officers to men at the front is about 1:30, and among the wounded 1:24, yet among the patients admitted to special hospitals for war neuroses in England during the year ending April 30, 1917, the ratio of officers to men was 1:6. This may be due to the greater mental strain which falls on the officer, or to the fact that his more intelligent, and probably more sensitive, delicate nervous system, suffers shock more easily. If the latter, it is a question as to whether highest intelligence means greatest military efficiency under the most trying conditions. The answer to this question lies in France.

However, there is an interesting and closely related problem which the military psychologist should undertake to work out on this side of the ocean: To what extent is intelligence correlated with general military efficiency as displayed in our military life? To test this, we measured at Camp Meade, the intelligence of 765 men of the 17th Infantry (Regulars), all of whom had been at least several months in the service, and under the same officers. These officers were then asked, without seeing our grades, to rate their men, not as to intelligence primarily, but as to "*military efficiency*, which means *practical soldier value* to the army, all things considered." In estimating military efficiency, the officers were told to "keep in mind such points as dependability, judgment, discipline, comradeship and initiative." Five grades of rating were used, both by the psychological examiners in measuring intelligence and by the officers in grading military efficiency.

The results show that in 49.5 per cent. of the total number of cases, the intelligence rating and rating for military efficiency were the same; in 38.9 per cent., there was a difference of one grade only between the two; in 11.0 per cent., a difference of two grades; and in 0.7 per cent., a difference of three or four grades. If we leave out the last five companies, which reported tardily, and whose commanders, we suspect, took the experiment less seriously, we find the two ratings in perfect agreement in 52.7 per cent. of the cases, within one grade of each other in 36.5 per cent. more, and agreeing within two grades in 10.2 per cent., or practically all remaining cases.

Such experiments should be repeated to find whether they

prove the implication of the present one, namely, that if we place a man according to his intelligence rating alone, we shall have placed him, in the great majority of cases, substantially according to his military efficiency, his general camp value. It appears reasonable to suppose, until facts from the front prove the contrary, that camp value and trench value, enemy-killing value, are closely coincident.

At this point, we pass the question of placement on to our military and social leaders, to generals and statesmen. It is our work to discover the intelligence of the division, to point to the heads that hold it: the commanding general must determine where, in his organization, it shall be placed, whether it shall be concentrated in machine gun companies chiefly, or in the ambulance train, or whether it shall be distributed uniformly throughout. Further, our statesmen and other social leaders, taking counsel with the eugenists, must decide to what extent the winning of the war demands the exposing of the most intelligent portion of our general population to the highest mortality.

General intelligence, then, while it is not the only quality that makes a man valuable, is not only highly important for its own sake, but is, in the mass, bound up with other qualities which make for military efficiency. In individual cases, the intelligence rating may prove to be an inexact index of a soldier's general value; it may even go agog as an accurate measure of his intelligence itself, owing to his peculiar condition when tested, or to the too particular application of a general method. But that psychometric methods and measures have a high value for army purposes there is no doubt.

Officers are to be chosen for training camps; a corps of quartermaster's clerks or personnel assistants must be selected; in our haste, we must sometimes choose "non-coms" overnight; the feeble-minded must be eliminated; the Depot Brigade holds several hundred illiterates who are to be divided between an infantry regiment and a labor battalion, according to their native ability to respond to training; the commanding general has a company of uneducated thrust into his division shortly before its departure and wishes to know whether their intelligence warrants taking them to France; the development battalion is swarming: who of the swarm can be successfully developed and sent back to the line, and who should be rejected? Companies, regiments, whole armies are to be balanced, for the saving of time in training, for the just rating of the officers responsible for them, and, most important of all, for effects in the field.

Wherever appear the problems of mental classification and placement, there the psychometrist can be of service.